

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Original) A powder adapted for three-dimensional printing, the powder comprising a blend of:

 a thermoplastic particulate material; and

 an adhesive particulate material,

 wherein the adhesive particulate material is adapted to bond the thermoplastic particulate material when a fluid activates the adhesive particulate material.
2. (Original) The powder of claim 1 wherein the fluid is aqueous.
3. (Original) The powder of claim 2 wherein the adhesive particulate material comprises the thermoplastic particulate material, such that the thermoplastic particulate material is at least sparingly soluble and adhesive in the activating fluid and is adapted to bond together when the fluid activates the thermoplastic particulate material by at least partially dissolving the thermoplastic particulate material and the thermoplastic particulate material is selected from the group consisting of acetal polyoxymethylene, polylactide, polyethylene, polypropylene, ethylene vinyl acetate, polyphenylene ether, ethylene-acrylic acid copolymer, polyether block amide, polyvinylidene fluoride, polyetherketone, polybutylene terephthalate, polyethylene terephthalate, polycyclohexylenemethylene terephthalate, polyphenylene sulfide, polythalamide, polymethylmethacrylate, polysulfones, polyethersulfones, polyphenylsulfones, polyacrylonitrile, poly(acrylonitrile-butadiene-styrene), polyamides, polycondensates of urea-formaldehyde, polystyrene, polyolefin, polyvinyl butyral, polycarbonate, polyvinyl chloride, polyethylene terephthalate, ethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, methyl cellulose, cellulose acetate, hydroxypropylmethyl cellulose, hydroxybutylmethyl cellulose, hydroxyethylmethyl cellulose, ethylhydroxyethyl cellulose, cellulose xanthate, and combinations and copolymers thereof.

4. (Original) The powder of claim 2 wherein the fluid that activates the thermoplastic particulate material is adapted to be solidifiable by exposure to at least one of ultraviolet light, visible light, heat, and electron beam, and combinations thereof.
5. (Original) The powder of claim 1 wherein the fluid is non-aqueous.
6. (Original) The powder of claim 5 wherein the fluid is non-halogenated.
7. (Original) The powder of claim 1 wherein the thermoplastic particulate material comprises particles having a mean particle diameter of about 10 micrometers to about 100 micrometers.
8. (Original) The powder of claim 1 wherein the thermoplastic particulate material comprises a thermoplastic material selected from the group consisting of acetal polyoxymethylene, polylactide, polyethylene, polypropylene, ethylene vinyl acetate, polyphenylene ether, ethylene-acrylic acid copolymer, polyether block amide, polyvinylidene fluoride, polyetherketone, polybutylene terephthalate, polyethylene terephthalate, polycyclohexylenemethylene terephthalate, polyphenylene sulfide, polythalamide, polymethylmethacrylate, polysulfones, polyethersulfones, polyphenylsulfones, polyacrylonitrile, poly(acrylonitrile-butadiene-styrene), polyamides, polycondensates of urea-formaldehyde, polystyrene, polyolefin, polyvinyl butyral, polycarbonate, polyvinyl chlorides, polyethylene terephthalate, ethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, methyl cellulose, cellulose acetate, hydroxypropylmethyl cellulose, hydroxybutylmethyl cellulose, hydroxyethylmethyl cellulose, ethylhydroxyethyl cellulose, cellulose xanthate, and combinations, and copolymers thereof.
9. (Original) The powder of claim 1 wherein the adhesive particulate material comprises particles having a mean particle diameter of about 10 micrometers to about 100 micrometers.
10. (Original) The powder of claim 1 wherein the adhesive particulate material comprises a resin selected from the group consisting of water-soluble resins and alkaline-reducible resins and the fluid activates the adhesive particulate material by dissolving the adhesive particulate material.
11. (Original) The powder of claim 10 wherein the resin is selected from the group consisting of maltodextrin, polyvinyl alcohol, sulfonated polyester polymer, sulfonated polystyrene,

octylacrylamide/acrylate/ butylaminoethyl methacrylate copolymer, acrylates/octylacrylamide copolymer, polyacrylic acid, polyvinyl pyrrolidone, styrenated polyacrylic acid, polyethylene oxide, sodium polyacrylate, sodium polyacrylate copolymer with maleic acid, polyvinyl pyrrolidone copolymer with vinyl acetate, butylated polyvinylpyrrolidone, polyvinyl alcohol-co-vinyl acetate, starch, modified starch, cationic starch, pregelatinized starch, pregelatinized modified starch, pregelatinized cationic starch, and combinations and copolymers thereof.

12. (Original) The powder of claim 1 wherein the adhesive particulate material comprises an inorganic adhesive.

13. (Original) The powder of claim 12 wherein the inorganic adhesive is selected from the group consisting of plaster, bentonite, precipitated sodium silicate, amorphous precipitated silica, amorphous precipitated calcium silicate, amorphous precipitated magnesium silicate, amorphous precipitated lithium silicate, salt, portland cement, magnesium phosphate cement, magnesium oxychloride cement, magnesium oxysulfate cement, zinc phosphate cement, zinc oxide – eugenol cement, aluminum hydroxide, magnesium hydroxide, calcium phosphate, sand, wollastonite, dolomite, amorphous precipitated silicates comprising at least two types of ions selected from the group consisting of sodium ions, lithium ions, magnesium ions, and calcium ions, and combinations thereof.

14. (Original) The powder of claim 1, further comprising:
a filler material.

15. (Original) The powder of claim 14 wherein the filler material comprises an inorganic material.

16. (Original) The powder of claim 15 wherein the inorganic material is selected from the group consisting of aluminum oxide, soda-lime glass, borosilicate glass, silica, aluminosilicate ceramic, limestone, plaster, bentonite, precipitated sodium silicate, amorphous precipitated silica, amorphous precipitated calcium silicate, amorphous precipitated magnesium silicate, amorphous precipitated lithium silicate, salt, portland cement, magnesium phosphate cement, magnesium oxychloride cement, magnesium oxysulfate cement, zinc phosphate cement, zinc oxide - eugenol

cement, aluminum hydroxide, magnesium hydroxide, calcium phosphate, sand, wollastonite, dolomite, amorphous precipitated silicates comprising at least two ions selected from the group consisting of sodium ions, lithium ions, magnesium ions, and calcium ions, and combinations thereof.

17. (Original) The powder of claim 14 wherein the filler material comprises an organic material.

18. (Original) The powder of claim 17 wherein the organic material comprises a carbohydrate.

19. (Original) The powder of claim 18 wherein the carbohydrate is selected from the group consisting of starch, modified starch, cellulose, maltodextrin, acacia gum, locust bean gum, pregelatinized starch, acid-modified starch, hydrolyzed starch, sodium carboxymethylcellulose, sodium alginate, hydroxypropyl cellulose, methyl cellulose, chitosan, carrageenan, pectin, agar, gellan gum, gum Arabic, xanthan gum, propylene glycol alginate, guar gum, and combinations thereof.

20. (Original) The powder of claim 17 wherein the organic material comprises a protein.

21. (Original) The powder of claim 20 wherein the organic material is selected from the group consisting of gelatin, rabbit-skin glue, soy protein, and combinations thereof.

22. (Original) The powder of claim 1, further comprising:
a processing aid material.

23. (Original) The powder of claim 1, further comprising:
a reinforcing fiber.

24. (Original) The powder of claim 1, further comprising:
a filler material; and
a processing aid material.

25. (Original) A fluid for three-dimensional printing, the fluid comprising:
a first solvent having a first boiling point,

wherein the fluid is adapted to activate an adhesive in a powder comprising a blend of a thermoplastic particulate material and an adhesive particulate material.

26. - 39. (Cancelled)

40. (Original) A fluid for three-dimensional printing, the fluid comprising:

a solvent,

wherein the fluid is adapted to activate the adhesive properties of at least a sparingly soluble thermoplastic particulate material.

41. - 59. (Cancelled)

60. (Original) A fluid for three-dimensional printing, the fluid comprising:

water, and

a second solvent having a second boiling point,

wherein the fluid is adapted to activate an adhesive in a powder comprising a blend of a thermoplastic particulate material and an adhesive particulate material.

61. - 67. (Cancelled)

68. (Original) A fluid for three-dimensional printing, the fluid comprising:

water; and

an amine,

wherein the fluid is adapted to activate the adhesive properties of at least a sparingly soluble alkaline-reducible particulate material.

69. - 75. (Cancelled)

76. (Original) A method for forming an article by three-dimensional printing, the method comprising the steps of:

providing a plurality of adjacent particles having a mean diameter of about 10 micrometers to about 100 micrometers, the particles comprising a blend of a thermoplastic particulate material and an adhesive particulate material; and

applying to the plurality of particles a fluid, within which the adhesive particulate material is at least partially soluble and the thermoplastic particulate material is substantially inert, the fluid activating the adhesive particulate material from a substantially inert state, in an amount sufficient to bond the plurality of particles together to define a substantially solid, singular article.

77. (Cancelled)

78. (Original) A method for forming an article by three-dimensional printing, the method comprising the steps of:

providing a plurality of adjacent particles having a mean diameter of about 10 micrometers to about 100 micrometers, the particles comprising a blend of a thermoplastic particulate material and an adhesive particulate material; and

applying to the plurality of particles a fluid, within which the adhesive particulate material is at least partially soluble and the thermoplastic particulate material is substantially inert, the fluid dissolving the adhesive particulate material, in an amount sufficient to bond the plurality of particles together to define a substantially solid, singular article.

79. (Cancelled)

80. (Original) A method for forming an article by three-dimensional printing, the method comprising the steps of:

applying, to a first portion of a first film of particles that includes a plurality of thermoplastic particles and an activatable adhesive, an aqueous fluid that activates the adhesive in an amount sufficient to form an essentially solid, singular article of adhered particles;

forming a second film of the particles on the first film; and

applying, to a first portion of the second film of particles, the aqueous fluid in an amount sufficient to activate the adhesive to the extent that the particles within the first portion of the second film adhere to each other and to at least a portion of the first portion of the first film to form an essentially solid, singular article from the first portion of the first film and the first portion of the second film.

81. (Cancelled)

82. (Original) A method for forming an article by three-dimensional printing, the method comprising the steps of:

applying, to a first portion of a first film of particles that includes a plurality of thermoplastic particles, a non-aqueous fluid that activates the surface of the thermoplastic particles in an amount sufficient to form an essentially solid, singular article of adhered particles;

forming a second film of the particles on the first film;

applying, to a first portion of the second film of particles, the non-aqueous fluid in an amount sufficient to activate the surface of the thermoplastic particles to the extent that the particles within the first portion of the second film adhere to each other and to at least a portion of the first portion of the first film to form an essentially solid, singular article from the first portion of the first film and the first portion of the second film; and applying at least one of an ultraviolet light, visible light, heat, and an electron beam on the printed layer to induce the non-aqueous fluid to solidify.

83. (Original) An article comprising:

a product of:

a powder, the powder comprising:

(i) a thermoplastic particulate material, and

(ii) an adhesive particulate material, and

a fluid that activates the adhesive particulate material to form a substantially solid article composed of the powder, the adhesive particulate material being substantially soluble in the fluid,

wherein the article includes a plurality of adjacent layers formed by the product, each layer having a contour defining an edge, and a final shape of the article being defined by respective edges of the layers.

84. - 87. (Cancelled)